Federal Energy Management
Program (FEMP)
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Federal Energy Management Program

Assessment of Load- and Energy-Reduction Techniques (ALERT)

FY 2001 Program Report

November 30, 2001

Contents

FY 2001 ALERT Program Report

Background

In FY 2001 FEMP ALERT teams helped Federal sites to proactively pursue energy efficiency and conservation, contributing to containment of energy costs and demonstrating leadership in the effort to stabilize the electrical grid in California and the Western United States.

The driving forces behind the FEMP ALERT program in FY 2001 were:

- the May 3, 2001, Presidential Directive,
- the National Energy Policy, and
- high peak loads on the western electrical grid, especially in California.

On May 3 the President directed "heads of executive departments and agencies to take appropriate actions to conserve energy use at their facilities to the maximum extent consistent with the effective discharge of public responsibilities. Agencies located in regions where electricity shortages are possible should conserve especially during periods of peak demand."

The National Energy Policy calls on the DOE Office of Energy Efficiency and Renewable Energy (EERE) technologies to reduce peak loading. EERE technologies can significantly reduce peak loads and load growth through improving building and industrial energy efficiency, through supplying distributed generation and storage, and through using communications and control technologies to provide real-time price information and other data to optimize efficiency.

ALERT team objectives in FY 2001, which were crafted to meet these directives, were to:

- contain rapidly escalating utility costs,
- reduce peak demand on the system,
- identify and capture public benefit funding to reduce project costs, and
- help Federal sites develop load-curtailment plans.

To respond to the objectives ALERT teams worked with federal facility staff to

- identify and implement no-cost and low-cost building operations measures,
- assess distributed generation (DG) opportunities,
- assess longer-term energy efficiency opportunities,
- assess public benefits funding opportunities, and
- implement efficiency and conservation measures where feasible.

FEMP ALERT was one component of a comprehensive effort in California and the Western region to maximize reductions in peak demand on the overtaxed electrical system. **Additional activities conducted by Federal sites in California include:**

- participation in the May 24 Load Reduction Test,
- an intensive effort to identify and implement energy-improvement projects (through appropriations, utility programs, and energy savings performance contracting),
- increased use of resource energy managers (REMs),
- greater emphasis on distributed generation, and
- coordination with state and local governments.

ALERT Team Work in California

In FY 2001, ALERT teams assisted Federal agencies in California that were experiencing price volatility and electricity supply shortages. Working with site staff, the ALERT teams conducted site assessments to identify and, where feasible, implement no-cost and low-cost measures to reduce energy demand and consumption. Site assessments included reviews of building heating, ventilating, and air-conditioning (HVAC) systems, lighting systems, and building automation, that followed prescribed protocols.

Because air conditioning (AC) is the greatest contributor to peak demand on the California electrical grid in summer, identifying AC peak load reduction measures was a high priority. The teams also performed limited assessments of the potential to use distributed generation (DG) and other capital-intensive energy efficiency measures at the sites. Hallmarks of the ALERT teams included fast response and site follow-up after the initial assessment.

Eight ALERT teams assessed 25 California sites between May 3 and July 31, 2001. In preparation for site visits, preliminary information was obtained from the sites, and tracking procedures and protocols for assessment and reporting were developed and implemented.

On August 30, 2001, FEMP sponsored a workshop and live Web cast at a participating site, the Presidio of San Francisco, to more broadly communicate lessons learned by the ALERT teams. The workshop drew 66 participants and the Web cast attracted 1600 viewers from Federal agencies and private-sector energy service providers nationwide.

Participating Federal Agencies

Agencies with sites that participated in the ALERT activity included the General Services Administration, U.S. Navy, U.S. Marine Corps, U.S. Army, National Aeronautics and Space Administration, Internal Revenue Service, Environmental Protection Agency, Veterans Administration, Department of Energy, U.S. Treasury Department, National Park Service, and U.S. Postal Service.

Follow On Work With 25 California Sites

The Department of Energy Seattle Regional Office (SRO), working with the ALERT teams, is following up with the 25 ALERT sites to ensure that the potential of the ALERT recommendations can be fulfilled. The objective is to work with site management to identify the resources needed to take action on recommendations made but not implemented during site assessments. SRO and ALERT teams will ensure that resources for project implementation are made available, such as FEMP support in the areas of Technical Assistance and Project Financing.

Composition of the ALERT Teams

The ALERT teams were drawn from several organizations:

- Department of Energy Laboratories
  - Pacific Northwest National Laboratory
  - Lawrence Berkeley National Laboratory
  - National Renewable Energy Laboratory
  - Oak Ridge National Laboratory
- Private sector
  - Aspen Systems
  - Alfa Tech Inc.
- California State University (CSU)
  - CSU San Diego
  - CSU San Francisco

The primary consideration in team deployment was the match of team expertise and experience with site needs. Teams that were familiar with a site or had experience working with systems and equipment used at a site were deployed to speed up the process and amplify comprehensiveness of the assessment. Site location was also considered; all other factors being equal, FEMP mobilized teams that would require the lowest travel expenses.

FY 2001 ALERT Funding

Uncosted/unobligated and redirected funds were used to support the ALERT activities during FY 2001.

Results and Implications

ALERT teams identified efficiency and conservation measures that will reduce demand, consumption, and energy cost at participating sites, as shown in Figure 1. Estimated savings from the identified measures, averaged for the 25 sites, are:

- Demand – 9.2%
- Cost – 10.4%
- Consumption – 10.6%

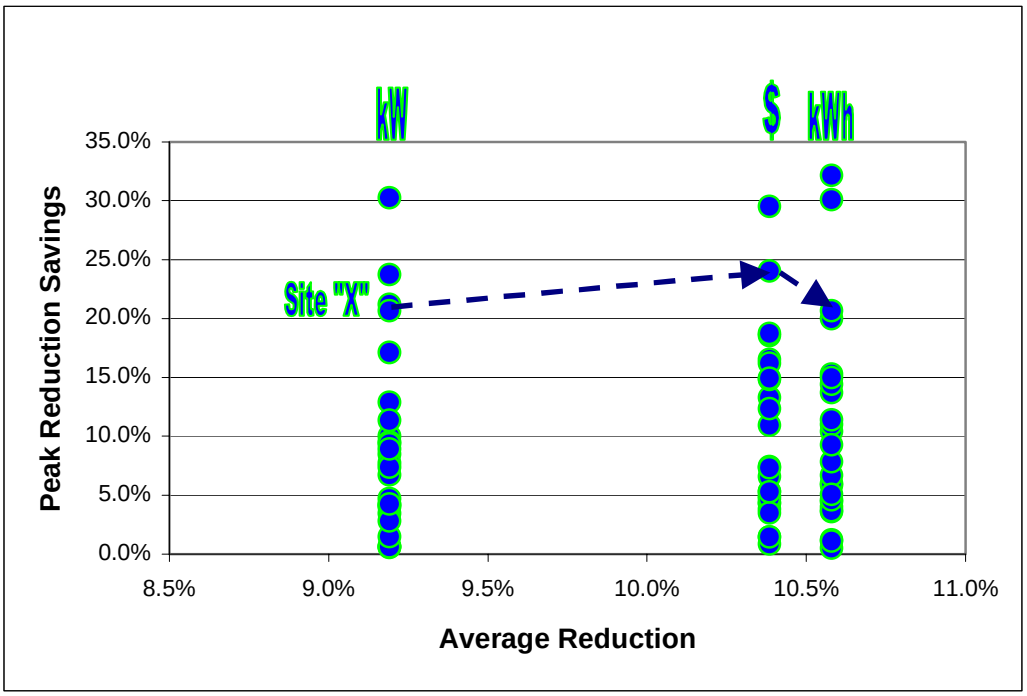

Figure 1
Distribution of savings demand (KW), cost ($) and consumption (KWh)] for 25 sites assessed in California.

The types and frequencies of recommendations resulting from the 25 California site assessments are illustrated in Figure 2. The ALERT teams focused primarily on identifying opportunities to reduce peak load through low-cost and no-cost operational efficiency measures. That focus is consistent with the high numbers of recommendations for controls, lighting, O&M, and awareness measures. Potentials for higher-cost and capital-intensive measures to reduce peak load such as on-site generation, capital improvements, and building envelope measures were assessed by the ALERT teams to support sites' planning efforts, but without expectations for their implementation in the short term.

Low-cost and no-cost measures are expected to be implemented during the site visit or shortly thereafter. Follow-up activities are designed to maximize realized savings by

helping sites with implementation of all remaining low- and no-cost measures and to facilitate project development for the more capital-intensive measures.

Potential for Contributing to Federal Energy Goals

The results of the 25 ALERT assessments are shown in Table 1 as estimated savings potentials for all 25 sites. An appendix gives more detailed scopes of the recommendations. These findings suggest that similar opportunities exist to improve operational efficiency at many federal sites, provided that resources are available. The large numbers of no- and low-cost measures identified show that the very modest commitment of resources required to implement these measures could yield a return of 10.4% annual cost savings. Considering that Federal agencies reduced site energy consumption by 21.7% between 1985 and 2000, this would be a significant accomplishment.

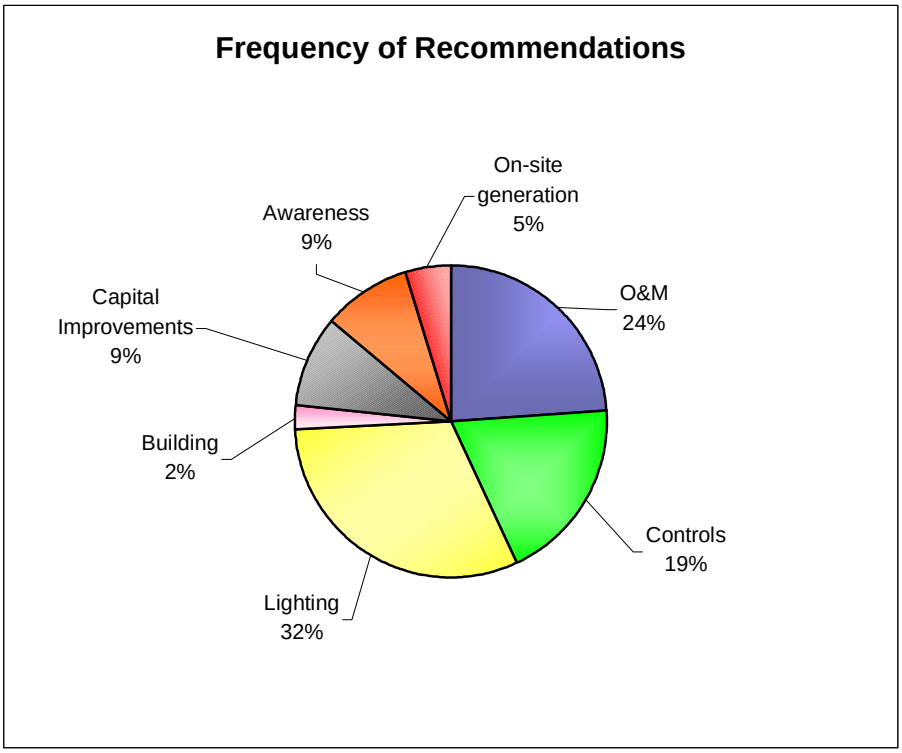

Figure 2
The high numbers of recommendations for controls, lighting, and O&M measures are consistent with the ALERT teams' focus on low-cost and no-cost measures.

Table 1. Summary of ALERT Assessment Results											
		Potential savings									
Agency	Site	%						Baseline			Implementation Cost
		kW	MWh	$	kW	MWh	$	kW	MWh	$	
DOD-Navy/ Marines	MCAS	7.0	23.4	25.0	233	3439	$296,693	3,329	14,700	$1,188,000	$17,300.00
DOD- Navy/ Marines	ACU5- Camp Pendelton		4.4	4.4	109	179	$57,500		4,104	$1,313,200	$324,000.00
NASA	Goldstone	21.2	32.2	29.5	802	4267	$302,826	3,782	13,271	$1,025,896	$648,448.00
IRS	Fresno	8.5	5.8	3.8	286	1134	$68,040	3,381	19,389	$1,792,495	$45,000.00
DOD	Monterey	4.7	3.6	4.3	118	539	$43,149	2,500	15,036	$1,008,329	$50,600.00
VAMC	Sepulveda	10.0	20.0	18.6	400	4790	$400,000	4,000	23,953	$2,156,000	$38,276.00
GSA	Appraisers	7.7	13.7	16.5	58	399	$45,900	750	2,915	$277,790	$52,000.00
GSA	NARA	6.7	4.4	4.9	25	39	$4,400	372	878	$89,200	$21,100.00
USPS	San Francisco	7.4	10.4	16.2	105	1082	$113,549	1,419	10,398	$701,310	$167,071.00
USPS	Oakland	0.5	6.0	5.3	17	1257	$132,500	3,100	21,000	$2,500,000	$232,500.00
USPS	San Diego	12.9	6.7	7.4	328	1027	$204,603	2,544	15,408	$2,756,334	$76,990.00
DOE	LBNL	0.7	1.2	1.4	80	939	$25,500	12,200	78,700	$1,770,200	$160,900.00
DOE	LLNL	9.5	4.0	4.4	4077	11410	$363,670	42,800	285,936	$8,358,600	$1,202,950.00
DOD	San Diego	23.7	11.0	10.9	37	95	$16,959	156	862	$155,189	$67,000.00
DOD	Coronado	17.1	11.4	13.3	161	970	$203,322	941	8,514	$1,532,480	$61,850.00
DOD	Point Loma	3.5	7.8	6.6	18	360	$54,475	521	4,597	$827,488	$75,400.00
DOD- Army	Ft. Irwin	0.6	0.5	0.9	122	478	$75,000	19,878	95,503	$8,794,884	$407,000.00
NASA	Dryden	4.0	1.1	1.4	322	270	$20,007	8,053	24,394	$1,392,374	$61,414.00
DOD-Navy/ Marines	29 Palms	9.4	3.7	7.3	1591	87100	$7,441,600	17,000	2,354,300	$101,939,730	$1,740,000.00
EPA	Bldg 75	4.1	14.4	12.3	58	706	$95,700	1,400	4,900	$776,500	$195,000.00
EPA	Bldg 95	11.3	15.3	14.8	34	162	$23,400	300	1,060	$157,967	$70,350.00
Mint	San Francisco	1.5	9.3	4.7	15	430	$16,872	984	4,632	$357,140	$51,872.00
USDA	Albany	2.8	15.0	15.0	56	1760	$125,000	2,000	11,746	$836,050	$83,325.00
NPS	GGNRA	30.3	30.1	18.7	3370	16676	$1,477,000	11,132	55,409	$7,892,269	$9,483,300.00
DOD	Camp Roberts	4.3	4.6	3.5	21	172	$10,360	494	3,733	$297,437	$148,000.00
DOD-Navy	China Lake	20.7	20.7	24.1	5055	20941	$1,634,745	24,451	101,294	$6,796,395	$6,733,071.00
USPS	Embarcadero	8.9	5.0	5.3	268	415	$30,339	3,000	8,220	$575,372	
	Average	9.2	10.6	10.4	658.0	5,964	$491,967.00	6,557.2	117,957.4	$5,824,764	$854,412.19
	Total				17765	161037	$13,283,109	170,487	3,184,851	$157,268,629	$22,214,717

ALERT Activities for FY 2002

Recent events have sharpened the focus on energy security and vulnerability. Peak loads are no longer causing emergencies but remain a factor in areas with transmission constraints. Containment of energy costs continues to be a high priority as sites feel the repercussions from the recent spate of rate increases in their energy budgets. Also, volatility in petroleum and natural gas prices seen during 2001 demonstrates the need to improve operational efficiencies to minimize consumption of and dependence on both commodities, particularly in areas subject to pipeline constraints and resulting price excursions.

Accordingly, FY 2002 FEMP ALERT teams will focus on:

- reducing peak electrical loads, energy consumption, and on-site fuel consumption for cost containment, through identification and implementation of no-cost and low-cost operational measures,
- managing peak loads,
- identifying public benefits funding and alternative tariffs and assistance with the application process
- identifying other FEMP support services desired by Federal sites, and
- assessing the potential for on-site generation to reduce energy vulnerability and enhance mission reliability.

FY 2002 ALERT teams will be ready for rapid mobilization and follow-up activities as requested by sites. The ALERT Teams will take quick action to address agencies' urgent needs including: management of price volatility, reduction of the impacts of escalating energy rates and addressing reliability and energy security issues. To the maximum extent possible, existing studies will be used to accelerate the process. Teams will focus on O&M strategies that can reduce energy costs and increase energy security. Teams will work with site personnel to develop implementation (strategic) plans to address these issues.

In addition to site assessments, FEMP ALERT activities in FY 2002 will include:

- development of new assessment protocols and training,
- tracking and reporting of projects,
- follow-up activities for ALERT sites,
- report quality control reviews, and
- a national ALERT workshop to share lessons learned with Federal agencies and private-sector service providers.